REMARKS

Claim Amendment

Claims 7, 9, 11, 13, 22, 44, 46, 54, 55 and 58 have been amended to include a complement of the recited nucleic acid molecule or construct.

Claims 7 and 22 have been amended to recite that the protein of SEQ ID NO: 2 is human CD2BP2 protein and that a fragment of this protein to which these claims are drawn has a biological activity of binding to a CD2 molecule. Support for this amendment is found throughout the specification and, in particular, on page 59, lines 1-16. Applicants also note that Claims 7 and 22 as amended incorporate the subject matter of the previously presented Claims 59-61, now cancelled.

Claim 9 has been amended to recite that the claimed nucleic acid molecule has the same nucleotide sequence as *endogenous human coding regions* encoding a protein of SEQ ID NO: 2. This amendment is supported by the disclosure that the protein of SEQ ID NO: 2 was derived from a human cDNA library.

Claims 44 and 46 have been amended to recite that the nucleotide sequences that code for polypeptides of SEQ ID NO: 3 and 10, respectively, and the nucleic acid molecules that comprise these coding sequences are heterologous to each other.

Claim 45 has been cancelled.

Claim 55 and 58 have been amended to recite that the claimed nucleic acid sequence encodes a polypeptide that comprises the amino acid sequence of SEQ ID NO: 3 and that a fragment of the protein of SEQ ID NO: 2 is human.

New Claims 62-64 have been introduced. Claim 62 is drawn to the subject matter of Claim 10, now cancelled. Claims 63 and 64 are drawn to the subject matter of the Claim 7 as filed, now amended.

This amendment introduces no new matter.

Summary of the Telephone Interview

A telephone interview between Examiner F. P. VanderVegt, representing the U.S. Patent and Trademark Office and Alice O. Carroll, Esq., and Alexander Akhiezer, Ph.D., representing Applicants, took place on October 20, 2004.

In the course of the interview, the Examiner and Applicants discussed potential amendments to the claims in order to obviate the outstanding grounds of rejection.

In particular, the Examiner suggested amendments to Claims 7, 44, 46, 55 and new Claim 63, proposed by Applicants, that would obviate the outstanding grounds for rejections under 35 U.S.C. §112 (written description, enablement and indefiniteness). Claims 8 and 10 were also discussed. Applicants agreed to amend the claims as suggested by the Examiner and to cancel Claims 8 and 10.

The Examiner and Applicants further discussed the outstanding rejection under 35 U.S.C. §102(b) over Percy. The Examiner agreed that the proposed amendment obviates the rejection.

The Examiner further stated that the proposed amendment after final may be entered and may place the instant application in condition for allowance.

Rejection of Claims 7-9. 14, 18, 22, 44-46 and 55-61 under 35 U.S.C. §112 (Written Description)

Claims 7-9, 14, 18, 22, 44-46 and 55-61 have been rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not described in the specification in sufficient detail to convey to one skilled in the art that the inventor had possession of the claimed invention.

1. Claims 7, 8, 14, 18 and 22

The Examiner stated that the claims are drawn to an isolated nucleic acid molecule that encodes a protein of SEQ ID NO: 2 (CD2BP2 protein), or a fragment of such protein, from a substantial variety of species, whereas the specification does not describe does not describe a nucleic acid encoding a CD2BP2 from any species other than human. The Examiner further stated that the specification does not describe "any other type of protein comprising a fragment of SEQ ID NO: 2". The Examiner concluded that an invention comprising a CD2BP2 protein derived from all species or "other proteins" comprising a fragment of SEQ ID NO: 2 having "an undisclosed function" is not adequately described.

Claim 8 has been cancelled.

Applicants have amended Claim 7, on which Claims 9, 14 and 18 depend, Claim 22 and Claims 55 and 58 to recite "human" in reference to the protein of SEQ ID NO: 2.

Claim 7 has been further amended to recite that an isolated nucleic acid molecule is one of the molecules that encode a protein comprising SEQ ID NO: 2 (a human CD2BP2 protein). To more particularly define the claimed invention, the recitation of this biological function has now been included into the claim in question.

New Claim 63 has been drawn to an isolated nucleic acid molecule that encodes a polypeptide that consists of a fragment of SEQ ID NO: 2 that has biological activity of binding to a CD2 molecule. (See page 59, lines 1- 16 and specifically page 59, lines 2 and 13 of the specification as filed.) New Claim 64 recites that such polypeptide comprises SEQ ID NO: 3.

Applicants submit that the subject matter of the new Claims 63 and 64 is adequately described in the specification as filed. Referring to the written description of the experiments performed by the inventors (see Exemplification) and especially to FIG. 3A, Applicants submit that the inventors possessed, as of the filing date, an isolated ***nucleic acid molecule coding for a human CD2BP2 and a number of recombinant nucleic acid molecules coding for fragments of human CD2BP2 that had biological activity of binding to a CD2 molecule***. Accordingly, independent Claims 7 and 22 as amended, as well as Claim 55 as amended and new Claims 63 and 64 are drawn to a subject matter that is fully and adequately described in the specification. Claims dependent on Claims 7, 44 and 55 are similarly adequately described.

Reconsideration and withdrawal of rejection are respectfully requested.

2. Claim 9

The Examiner stated that the specification does not provide sufficient written description for Claim 9. The Examiner stated that Claim 9 recites an "endogenous gene encoding a protein of SEQ ID NO: 2", and therefore, reads on genomic sequences. The Examiner also stated that the only nucleotide sequence, coding for the protein of SEQ ID NO: 2, described in the specification is the nucleic acid molecule of SEQ ID NO: 1, which is a cDNA molecule. The Examiner further stated that cDNA molecule of SEQ ID NO: 1 does not describe introns and therefore written description of an endogenous gene is lacking.

Claim 9 has been amended to recite that the claimed nucleic acid molecule has the same nucleotide sequence as endogenous human coding regions encoding a protein of SEQ ID NO: 2. This amendment is supported by the disclosure that the protein of SEQ ID NO: 2 was derived

from activated human T-cell cDNA library, that is a library that does not contain non-coding genomic sequences. Accordingly, Applicants believe that this amendment overcomes the Examiner's rejection.

Reconsideration and withdrawal of rejection are respectfully requested.

Rejection of Claims 7-9, 14, 18, 22 and 44-46 under 35 U.S.C. 35 §112 (Enablement)

Claims 7-9, 14, 18, 22 and 44-46 are rejected under 35 U.S.C. 35 §112, first paragraph because the specification does not enable a person skilled in the art to practice the claimed invention commensurate with the scope of the claims.

1. Claims 7 and 8

The Examiner stated that the claims in question are not enabled for an isolated nucleic acid molecule which encodes the CD2BP2 protein (SEQ ID NO: 2) or a fragment thereof having CD2BP2 activity.

Regarding Claim 7, the Examiner stated that Claim 7 is directed to a protein fragment having undisclosed biological activity of SEQ ID NO: 3 and 9 and further that it is not enabled for the broader recitation of an isolated nucleic acid molecule which encodes any protein comprising a fragment of SEQ ID NO: 2 having activity of SEQ ID NO: 3 or 9.

Claim 8 has been cancelled.

Claim 7 as amended is drawn to an isolated nucleic acid that encodes a human CD2BP2 protein of SEQ ID NO: 2 that binds a CD2 molecule. Applicants believe that this amendment obviates the Examiner's rejection.

New Claims 63 and 64 have been drawn to an isolated nucleic acid molecule that encodes a polypeptide that consists of a fragment of SEQ ID NO: 2 that has biological activity of binding to a CD2 molecule. (See page 59, lines 1- 16 and specifically page 59, lines 2 and 13 of the specification as filed.) New Claim 64 recites that such polypeptide comprises SEQ ID NO: 3.

Applicant submit that new Claims 63 and 64 are fully enabled. Referring to FIG. 3A, the inventors clearly teach at least one method of preparing a number of recombinant nucleic acid molecules coding for ***several fragments*** of human CD2BP2 that have biological activity of binding to a CD2 molecule. Additionally, Applicants submit that the full sequence of CD2BP2

(SEQ ID NO: 2) is disclosed and the examples of contemplated biological activities are provided (page 28, lines 10-12), the methods for assessing these activities are either exemplified in the disclosure or well established in the art (page 11, line 25 through page 12, line 4 and page 12, line 13 through page 13, line 19). Therefore, a skilled practitioner is fully enabled to find *any* functional fragment of CD2BP2 without undue experimentation.

Reconsideration and withdrawal of rejection are respectfully requested.

2. Claims 7-9, 14, 18, 22 and 44-46

The Examiner stated that the specification does not provide sufficient guidance for making a nucleic acid molecule that encodes a CD2BP2 protein derived from any species other than human.

Claim 8 has been cancelled.

Applicants have amended Claims 7, 9, 22, 55 and 58 to recite "human CD2BP2" in reference to the protein of SEQ ID NO: 2.

The Examiner stated that the disclosure does not provide sufficient guidance for making a nucleic acid molecule which encodes *any* fragment of CD2BP2 which has CD2BP2 activity.

Claim 7 has been amended to recite that an isolated nucleic acid molecule is one of the molecules that encode a protein comprising SEQ ID NO: 2 (a human CD2BP2 protein). Applicants believe that this amendment obviates the Examiner's rejection.

New Claims 63 and 64 have been drawn to an isolated nucleic acid molecule that encodes a protein that consists of a fragment of SEQ ID NO: 2 that has biological activity of binding to a CD2 molecule. For the reasons presented above, Applicant submit that new Claims 63 and 64 are fully enabled.

Claim 22 has been amended to recite that the activity of a fragment is that is binds to CD2. Claims 44 and 46 are drawn to isolated recombinant nucleic acid molecules that comprise recited nucleic acid sequences that are fully described in the specification, namely SEQ ID NO: 3 and 10. As mentioned above, the specification teaches at least one method of preparing a number of recombinant nucleic acid molecules coding for several fragments of human CD2BP2 that have biological activity of binding to a CD2 molecule and, since the full sequence of CD2BP2 (SEQ ID NO: 2) is disclosed and the examples of contemplated biological activities are

provided (page 28, lines 10-12) and the methods for assessing these activities are exemplified in the disclosure (page 11, line 25 through page 12, line 4 and page 12, line 13 through page 13, line 19), a skilled practitioner is fully enabled to find *any* functional fragment of CD2BP2 without undue experimentation.

Reconsideration and withdrawal of rejection are respectfully requested.

Rejection of Claims 44-46 under 35 U.S.C. §112 (Indefiniteness)

Claims 44-46 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner stated that in the recitation "wherein said nucleotide sequence is heterologous" it is unclear what the nucleotide sequence is heterologous to.

Claim 45 has been cancelled.

Applicants have amended Claims 44 and 46 to recite that the nucleotide sequences that code for polypeptides of SEQ ID NO: 3 and 10, respectively, and the nucleotide molecule that comprises these coding sequences are heterologous to each other. Applicants believe that this amendment overcomes the Examiner's objections.

Reconsideration and withdrawal of rejection are respectfully requested.

Rejection of Claims 7, 8, 45 and 55-60 under 35 U.S.C. §102 (b)

Claims 7, 8, 45 and 55-60 are rejected under 35 U.S.C. §102 (b) as anticipated by the results of NCBI BLAST search, submitted to the EMBL data library in October 1996 by Percy, C. (hereinafter "Percy").

Percy teaches a nucleotide sequence derived from *C. Elegans*, wherein nucleotides 19-45 of the disclosed sequence are encompassed by SEQ ID NO: 9 of the instant invention.

The Examiner stated that since the instant specification discloses that the biological function of SEQ ID NO: 9 is to bind to a sequence on a CD2 molecule determined by SEQ ID NO: 10, the protein of Perry anticipates a protein that binds to CD2.

Applicants amended Claims 7, and 55 to recite "human CD2BP2" in reference to the protein of a claim.

Claim 8 has been cancelled.

Claim 12 has been amended to recite that the isolated nucleic acid is human.

Claim 45 has been cancelled.

Claims 55 and 58 have been amended to recite that the claimed nucleic acid encodes an amino acid of SEQ ID NO: 3.

Applicants believe that these amendments obviate the rejection.

Reconsideration and withdrawal of the rejection are respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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